

EPA DIESEL RETROFIT PROGRAM

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Diesel Emission Background

- Diesel engine emissions are significant contributors to the mobile source inventory:
 - ~58 percent of NOx inventory
 - ~89 percent of PM inventory
- Marine diesel engines:
 - Land diesels are the major contributors
 - However, marine engine emissions are localized:
 - Approximate NOx on a summer day from Marine diesels:
 - San Diego - 17%
 - San Francisco - 12%
 - Beaumont-Port Arthur - 15%

Diesel Emission Background

- Serious health effects
 - Air Toxic
 - Respiratory effects
 - Especially children and elderly
- Likely Human carcinogen
- SCAQMD Study attributes 70% of all cancer deaths from exposure to air toxics to diesel PM emissions

Efforts to Reduce Diesel Emissions

■ Current and Future Programs

- Certification Programs
- SEA Testing
- Urban Bus Retrofit Program
- 2004 heavy duty on-highway rule
- 2007 heavy duty on-highway rule and diesel fuel requirements
- Marine CI rule (see www.epa.gov/otaq/marine.htm):
 - Engines similar to land-based non-road or locomotive
 - standards take effect between 2004 and 2007
 - “off-cycle” requirements
- New in-use diesel compliance and testing programs



Why a Voluntary Retrofit Program ?

- Rules won't be fully effective for years (~2030)
 - Diesel engines last and can be rebuilt
 - Compliance programs can't make existing engines cleaner
- Retrofit technologies are advancing quickly:
 - Expansion of the Urban Bus Retrofit Program
 - Technologies for new rules are available today
 - Technologies are becoming more cost effective
- Voluntary element allows technology to be used today
 - Building on other EPA Voluntary Measures
 - Market for technology seems ready



Voluntary Retrofit Overview

- EPA announced the program at the March 2000 Corning Retrofit Workshop
 - We initiated a goal of 10,000 planned installations by March 2001
 - Initial focus on 3 or 4 cities with pilot programs
 - Provide support to any other city or retrofit project
- Applies to any diesel engines
 - on-highway, non-road, marine, locomotive
 - certified or pre-certified
- Creates a process for verifying technology
 - Partnerships with NESCAUM and EPA's ORD/ETV program
- Provides incentives
 - SIP credits
 - Potential for trading/offset credits



What is a Retrofit ?

■ According to Webster:

- To furnish or provide with new equipment or parts unavailable at the time of original manufacturer or construction

■ Some possible options or activities:

- Addition of new/improved after-treatment equipment
- Upgrading a certified engine to a cleaner certified configuration
- Upgrading an uncertified engine to a cleaner “certified-like” configuration
- Conversion of any engine to run on a cleaner fuel
- Early replacement of older engines with newer/cleaner engines
- Use of cleaner fuel and/or emission reducing fuel additive
- Others...

Building the Retrofit Program

■ EPA is establishing strong partnerships:

- Regional EPA offices
- State and local agencies
- Industry (Retrofit, Engine, and Vehicle/Equipment Manufacturers)
- Environmental organizations
- Fleet owners

■ We will pool our resources and expertise to:

- Allow fleet owners to select appropriate technologies and conduct appropriate testing
- Give air quality planners confidence in determining SIP credits
- Provide a path to verify retrofit technology
- Identify potential funding sources for retrofit projects

■ Final Product: Retrofit Website

- Available mid July, 2000



The Voluntary Retrofit Website

- Site will be a tool for creating retrofit projects
 - Program guidelines
 - Application forms
 - Verified technologies
 - Emissions reduction calculator
 - Example programs
 - Contacts
 - Potential funding sources

- In addition to site:
 - We will working closely with pilot projects
 - Provide technical support



Emission Reductions Estimate

■ Assumptions about the Navy fleet:

- Pre-certified NOx level: 7.6 g/bhp-hr
- Pre-certified PM level: .50 g/bhp-hr
- Typical fuel consumption: 21 gal/hr or 146 lbs/hr
- Number of vessels: 4000
- Average service remaining: 10 years

	<u>Catalyst (20%)</u>	<u>Trap (80%)*</u>	<u>NOx Tech (25%)</u>
PM (tons)	2,170	8,684	--
NOx (tons)	--	8,560	42,804

* Assumes use of low sulfur diesel fuel which may provide a nominal NOx reduction of 5%



Additional Information

- EPA Retrofit website - coming soon!
 - <http://www.epa.gov/retrofit>
- Voluntary measures website
 - <http://epa.gov/oms/transp/traqvolm.htm>
- Marine CI Rulemaking
 - <http://epa.gov/otaq/marine.htm>



Additional Information

■ Voluntary Retrofit Program

– Technical Information

- Mitch Greenberg

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– Overall program information

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■ Marine CI Regulation Contact

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